HOOVER LAKE

Introduction

Hoover Lake is a small, natural lake in the western High Uintas. Biologically and geologically it is comparable to hundreds of similar lakes in the High Uintas. It is included in this study to assist in the evaluation of other similar types of lakes that are not accessible by vehicle. It is near the Mirror Lake area, but accessible from the Murdock Basin Road. It has two sister lakes, Marshall and Shepherd, of which Marshall is included in this document.

Characteristics and Morphometry

Lake elevation (meters / feet)	3,017 / 9,900
Surface area (hectares / acres)	7 / 17
Watershed area (hectares / acres)	201 / 497
Volume (m^3 / acre-feet)	209,695 / 170
Annual inflow (m^3 / acre-feet)	not measured
Retention time (years)	unknown
Drawdown (m^3 / acre-feet)	0 / 0
Depth (meters / feet)	
maximum	7.6 / 25
mean	3 / 10
Length (meters / feet)	490 / 1,600
Width (meters / feet)	210 / 700
Shoreline (meters / feet)	1,130 / 3,700

The shoreline is owned by the Wasatch-Cache National Forest, and public access is unrestricted. The lake drainage is at the headwaters of the Duchesne River and is not regulated by man. Water is used for recreation and coldwater aquatic habitat.

Location

County	Duchesne
Longitude / Latitude	110 52 11 / 40 40 46
USGS Map	Hayden Peak 1972
DeLorme's Utah Atlas & Gazetteer™	Page 54, B-3*
Cataloging Unit	Duchesne (16060003)

*Not labelled on the map. It is 1 mile NE of Echo Lake.

Recreation

Hoover Lake is a two mile hike from the Moosehorn Campground, just south of Mirror Lake. Follow the trail (beginning across U-150 from the campground) to the east, around Fehr Lake, south to Shepherd Lake, then continue on south for a few hundred meters to Hoover Lake. The trail appears to go directly to Hoover Lake. To drive closer to

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the lake, take the Murdock Basin turnoff (about 21 miles east of Kamas and 10 miles southwest from Mirror Lake). Follow FS-027 and then FS-137 (gravel roads) for about 8 miles. At the end of the road, hike due west for a few hundred meters through the forest to the lake.

Fishing, camping, picnicking, scenic beauty and hiking are all popular. The lake is to small for motorized boats, and water temperatures make it to cold for most swimmers. The backdrop of high, barren peaks are reflected in the still water of the lake.

The area receives moderate to heavy recreational use throughout the summer. Please tread lightly so that the area remains relatively pristine. U-150 is closed during the winter and much of the spring, but groomed for cross-country skiers, snowmobilers and hikers.

There are no recreational facilities at the lake, but there are campgrounds on U-150. Campers at the lake should pack out their trash, and properly dispose of any human waste.

Limnological Data

Data sampled from STORET site: 593595

Surface Data	1981	1990	1992
Trophic Status	M	M	O
Chlorophyll TSI	-	33.54	33.17
Secchi Depth TSI	-	44.41	39.32
Phosphorous TSI	-	42.71	43.66
Average TSI	47	40.22	38.72
Chlorophyll a (ug/L)	-	1.4	1.3
Transparency (m)	-	3.0	4.2
Total Phosphorous (ug/L)	20.0	14.5	16
pH	7.7	7.0	6.7
Total Susp. Solids (mg/L)	5	<3	<3
Total Volatile Solids (mg/L)	-	-	0
Total Residual Solids (mg/L)	-	-	3
Temperature (°C / °f)	18/64	17/62	15/60
Conductivity (umhos.cm)	10	20	14
Water Column Data			
Ammonia (mg/L)	0.05	0.03	0.03
Nitrate/Nitrite (mg/L)	.05	-	0.08
Hardness (mg/L)	8	6.8	7.6
Alkalinity (mg/L)	4	4	4
Silica (mg/L)	-	-	0.5
Total Phosphorus (ug/L)	20	18	15
Miscellaneous Data			
Limiting Nutrient	N	N	N
DO (Mg/l) at 75% depth	-	6.9	7.4
Stratification (m)	-	NO	4-7
Depth at Deepest Site (m)	-	3.5	7.0

Watershed Description

Hoover Lake is located in the western end of the High Uintas. The watershed is very small. The lake is perched on a bench high on the Duchesne River Gorge, and at the foot of Murdock Mountain, a 500' high rocky escarpment. The area is densely forested, interspersed with rocky, barren peaks. In this area of the Uintas, glaciation has removed the majority of the high mountains, leaving only isolated peaks.

The watershed high point, Murdock Mountain, is 3,286 m (11,212 ft) above sea level, thereby developing a complex slope of 24.5% to the reservoir. There are no streams flowing into the lake, but because of the high elevation, snowmelt runoff flows for much of the summer. In addition there are several springs in the area contributing water to the lake.

The watershed is made up of high mountains and rocky outcroppings. The soil associations that compose the watershed are listed in Appendix III.

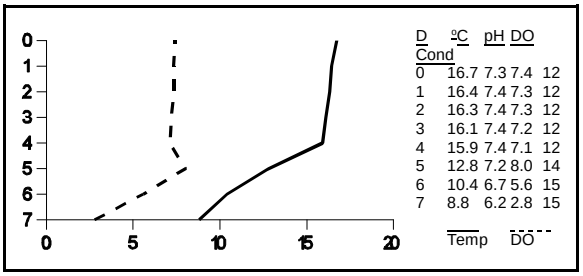
The vegetation communities consist of pine, oak, maple, spruce-fir, aspen, and alpine. The watershed receives 76 - 102 cm (30 - 40 inches) of precipitation annually. The frost-free season around the reservoir is 0 - 20 days per year.

Use of watershed land is primarily recreational. The watershed is too steep and rocky to provide for other uses.

Limnological Assessment

The water quality of Hoover Lake is very good. It is considered to be very soft with a hardness concentration value of 8 mg/L (CaCO3). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. Although the average concentration of total phosphorus in the water column has never exceeded the State's pollution indicator (25 ug/L), concentrations as high as 35 have been reported as various depths in the water column. Although dissolved oxygen concentrations are not considered to have violated State standards they do reach low levels near the bottom of the lake. A review of the profile obtained on August, 1990 showed concentrations near 7.4 mg/L above the thermocline (4 meters) with a declining trend to 2.8 mg/L at the bottom (7 meters). The lake is defined as a nitrogen limited system with TSI values indicating the lake is a border line oligotrophic/mesotrophic lake with an overall TSI index of 40.22 in 1990 and 38.72 in 1992. The TSI evaluation in 1981 was based totally on phosphorus which had a value near the detection limit at the time. The phosphorus concentrations in recent years appear to be stable at approximately 16 ug/L which is well under the established pollution indicator or 25 ug/L. The profile of August 5, 1992 indicates that the reservoir was stratified with a thermocline developing at 4-5 meters. As indicated previously there was a noticeable decline in the

concentration of dissolved oxygen in the water column below the thermocline. The concentration declines to a low of 2..8 mg/L the bottom. These types of conditions may impact the fishery. Dissolved oxygen concentrations have not been surveyed during the winter and could reach a critical state during the winter period for fish due to the length of the season and the shallow nature of the lake. According to DWR principle invertebrates present in the lake include Amphipoda, Coleopetera, and Zygoptera naiads with Sparganium as the principle aquatic vegetation present during a DWR survey. No fish kills have been reported at Hoover Lake.



The DWR has stocked cutthroat trout (*Oncorhynchus clarki*), but currently stocks the lake annually with 2,300 fingerling brook trout (*Salvelinus fontinalis*). In addition arctic grayling (*Thymallus arcticus*) have been stocked. The lake has not been chemically treated by the DWR, so populations of native fishes may be present in the lake.

Macrophytes are prevalent in the lake. Water lilies are very abundant in the shallow literal zone. Coverage is equivalent to approximately 10% of the lake surface area. In addition submergent macrophytes are fairly extensive throughout the lake.

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm^3/liter)	% Density By Volume
Sphaerocystis schroeteri	2.641	65.28
Merismopedia tenuissima		0. 6 0 0 14.84
Aphanothece nidulans	0.500	12.37
Haematococcus sp.	0.103	2.54
Oocystis sp.	0.042	1.03
Dinobryon divergens	0.037	0.91
Chroococcus sp.	0.033	0.82
Unknown spherical green alga	0.025	0.62
Pennate diatoms	0.023	0.58
Centric diatoms	0.013	0.33
Scenedesmus bijuga	0.011	0.27
Ankistrodesmus falcatus	0.009	0.22
Unknown chrysophyte	0.005	0.12
Tetradesmus sp.	0.003	0.07
Total	4.044	
Shannon-Weaver [H']	1.17	
Species Evenness	0.44	
Species Richness [d]	0.59	

The phytoplankton commnutity is dominated by the presence of green algae, however there is a significant representation of blue-green algae. The species of green algae is typical of fairly good water quality.

Information

Management Agencies	
Uinta Basin Association of Governments	722-4518
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Wasatch-Cache National Forest	524-5030
Kamas Ranger District	783-4338
Recreation	
Dinosaurland Travel Region (Vernal)	798-6932

Pollution Assessment

Recreation is the sole source of nonpoint pollution, and there are no point sources of pollution.

Beneficial Use Classification

The state is currently proposing the following beneficial use classifications; boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).